

WHAT IS CLAIMED IS:

1. A support structure carrying a thrust load of a transmission having an input shaft with its rotation changed stepwise or continuously to be transmitted to an output shaft, wherein
a thrust needle roller bearing carries a thrust load generated by
5 rotation of said input shaft or said output shaft and said thrust needle roller bearing has needle rollers arranged in two rows.
2. The support structure according to claim 1, wherein
said transmission includes a torque converter having an impeller and a turbine opposite to each other with a stator therebetween, and
said thrust needle roller bearing having said needle rollers
5 arranged in two rows is provided at, at least one of places respectively between said stator and said impeller and between said stator and said turbine.
3. The support structure according to claim 1, wherein
said transmission includes a gear mechanism constituted of a plurality of gears, and
said thrust needle roller bearing having said needle rollers
5 arranged in two rows is provided to carry a thrust load generated by rotation of said gears.
4. The support structure according to claim 1, wherein
said support structure carrying a thrust load of said transmission is a support structure for a continuously variable transmission having an input shaft with its rotation changed continuously to be transmitted to an
5 output shaft.
5. The support structure according to claim 4, wherein
the width of a groove of a first pulley provided on said input shaft and the width of a groove of a second pulley provided on said output shaft

are each changed to vary the diameter of contact of a belt, looped over said
5 first pulley and said second pulley, with said first pulley as well as the
diameter of contact of said belt with said second pulley and thereby
continuously change rotation of said input shaft to transmit resultant
rotation to said output shaft.

6. The support structure according to claim 1, wherein
said thrust needle roller bearing has a plurality of needle rollers
and two annular cages, said two cages respectively have a plurality of
pockets having a radial length slightly larger than that of said needle
5 rollers, roller holder portions formed at said plurality of pockets
respectively are structured to allow said two cages to hold said needle
rollers therebetween in the direction from above and below, and needle
rollers are arranged in two rows in each of said plurality of pockets.

7. The support structure according to claim 6, wherein
one of said two cages is caulked to be fixed to the other cage on at
least one of the radially outermost end and the radially innermost end of
said two cages.

8. The support structure according to claim 6, wherein
said two cages are caulked on both of the radially outermost end
and the radially innermost end of said two cages, and a flat portion having
a cross-sectional height lower than that of said roller holders is provided
5 between a caulked portion produced by caulking of said two cages and
corresponding ends of said needle rollers.

9. The support structure according to claim 6, wherein
said two cages are welded on at least one of the radially innermost
end and the radially outermost end of said two cages.

10. The support structure according to claim 1, wherein
said needle rollers have an end-surface shape represented by

symbol A, symbol F or a combination of those represented by symbols A and F defined by JIS.

11. The support structure according to claim 1, wherein one of said needle rollers arranged in two rows that is located on the radially outer side has its length which is at least the length of the needle roller located on the radially inner side.

12. The support structure according to claim 1, wherein said roller holder portions have their corners rounded smoothly.

13. A thrust needle roller bearing used for a support structure carrying a thrust load of the transmission as recited in claim 1.

14. A method of manufacturing the support structure carrying a thrust load of the transmission as recited in claim 1, wherein

said thrust needle roller bearing has a plurality of needle rollers and two annular cages, said two cages respectively have a plurality of pockets having a radial length slightly larger than that of said needle rollers, roller holder portions formed at said plurality of pockets respectively are structured to allow said two cages to hold said needle rollers therebetween in the direction from above and below, and said needle rollers are arranged in two rows in each of said plurality of pockets, and

said two cages and said needle rollers are assembled so that said cages hold said needle rollers therebetween in the direction from above and below by said roller holder portions formed respectively at said plurality of pockets, one of said two cages is caulked to the other cage, and thereafter said two cages and said needle rollers are carburized, quenched and tempered.

15. A method of manufacturing the support structure carrying a thrust load of the transmission as recited in claim 1, wherein

said thrust needle roller bearing has a plurality of needle rollers

5 and two annular cages, said two cages respectively have a plurality of
pockets having a radial length slightly larger than that of said needle
rollers, roller holder portions formed at said plurality of pockets
respectively are structured to allow said two cages to hold said needle
rollers therebetween in the direction from above and below, and said needle
rollers are arranged in two rows in each of said plurality of pockets, and
10 said two cages and said needle rollers are each carburized,
quenched and tempered and thereafter assembled so that said cages hold
said needle rollers therebetween in the direction from above and below by
said roller holder portions formed respectively at said plurality of pockets,
and one of said two cages is caulked to the other cage.